

- LAB
- F3  
Amend
- (iii) transferring said EGs into a recipient avian embryo of the same species as the avian used to obtain said isolated PGCs; and
- (iv) allowing said recipient avian embryo to develop into a germline or somatic cell chimeric avian.

### REMARKS

Claims 4 and 15 are amended to correct the spelling and taxonomic designation of the avian grouping *Gallinaceae*, which refers to an avian order rather than to a genus. The term *Gallinaceae* is used to refer to the avian order that includes chickens and turkeys, for example, in Webster's Unabridged Dictionary (1913) and in "Wildlife utilization in Latin America," by Juhani Ojasti (1996) (see attached pages from the Internet).

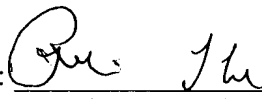
Claims 25-30 are amended by removing unnecessary limitations. Claims 25, 26, 29, and 30 are amended to recite transferring EGs into a recipient avian embryo of unspecified stage to develop into a chimeric avian. Those skilled in the art would be able to practice the claimed method successfully to produce chimeric avians by transferring EGs produced according to the disclosed invention into recipient avian embryos of various different stages, including Stages X and XII-XIV, as described on page 22, lines 12-14, of the specification. Claims 27-30 are amended to recite the step of isolating PGCs as described, for example, at lines 11-12 of page 12.

The issues raised by the Office Action dated December 2, 2001, have been addressed in this and the foregoing Amendments and Replies, and the claims are now believed to be in form for allowance. If the Examiner has any further questions or issues to raise regarding the subject application, it is respectfully requested that he contact the undersigned so that such issues may be addressed expeditiously.

Respectfully submitted,  
PILLSBURY WINTHROP LLP

Date: September 3, 2002

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By:   
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Registration No. 35,030

## APPENDIX

### IN THE CLAIMS:

Claims 4, 15, and 25-30 are amended as shown below:

4. (Amended ) The method of Claim 1, wherein said avian PGCs are obtained from an avian of the [genus *Gallinacea*] order *Gallinaceae*.

15. (Amended) The method according to Claim 14, wherein said PGCs are derived from avian embryos of the [genus *Gallinacea*] order *Gallinaceae*.

25. (Twice Amended) A method of producing germline chimeric avians comprising:

- (i) isolating primordial germ cells (PGCs) from a Stage XII-XIV avian embryo;
- (ii) maintaining such PGCs in a tissue culture medium containing at least the following growth factors:
  - (1) leukemia inhibitory factor (LIF),
  - (2) basic fibroblast growth factor (bFGF),
  - (3) stem cell factor (SCF) and
  - (4) insulin-like growth factor (IGF);
- (iii) transferring said PGCs into a [Stage XII-XIV] recipient avian embryo; and
- (iv) obtaining germline chimeric avians having germline cells that have the genotype of said PGCs.

26. (Thrice Amended) A method of producing germline and somatic cell chimeric avians which comprises:

- (i) isolating primordial germ cells (PGCs) from a Stage XII-XIV avian embryo;
- (ii) maintaining such PGCs in a tissue culture medium containing at least the following growth factors:
  - (1) leukemia inhibitory factor (LIF),
  - (2) basic fibroblast growth factor (bFGF),
  - (3) stem cell factor (SCF) and
  - (4) insulin-like growth factor (IGF),for a sufficient time to produce embryonic germ (EG) cells;
- (iii) transferring said EGs into a recipient [Stage X] avian embryo of the same species as the avian used to obtain said isolated PGCs;
- (iv) allowing said recipient avian embryo to develop into a germline and somatic cell chimeric avian having germline and somatic cells that have the genotype of said PGCs.

27. (Twice Amended) A method for producing avian embryonic germ (EG) cells comprising:

- (i) isolating [a population of] primordial germ cells (PGCs) from a Stage XII-XIV avian embryo;
- (ii) culturing said [population of] PGCs for a period of at least fourteen days in tissue culture in the absence of a feeder layer in a culture medium comprising:
  - (1) leukemia inhibitory factor (LIF),
  - (2) basic fibroblast growth factor (bFGF),
  - (3) stem cell factor (SCF) and
  - (4) insulin-like growth factor (IGF)so that avian EG cells are produced.

28. (Twice Amended) A method for producing a chimeric avian comprising:
- (i) isolating [a population of] primordial germ cells (PGCs) from a Stage XII-XIV avian embryo;
  - (ii) culturing said [population of] PGCs for a period of at least fourteen days in tissue culture in the absence of a feeder layer in a culture medium comprising:
    - (1) leukemia inhibitory factor (LIF),
    - (2) basic fibroblast growth factor (bFGF),
    - (3) stem cell factor (SCF) and
    - (4) insulin-like growth factor (IGF);
  - (iii) transferring said PGCs into a recipient avian embryo of the same species as the avian used to obtain said isolated PGCs;
  - (iv) allowing said recipient avian embryo to develop into a chimeric avian.

29. (Twice Amended) A method for producing a germline chimeric avian comprising:
- (i) isolating [a population of] primordial germ cells (PGCs) from a Stage XII-XIV avian embryo;
  - (ii) culturing said [population of] PGCs for a period of at least fourteen days in tissue culture in the absence of a feeder layer in a culture medium comprising:
    - (1) leukemia inhibitory factor (LIF),
    - (2) basic fibroblast growth factor (bFGF),
    - (3) stem cell factor (SCF) and
    - (4) insulin-like growth factor (IGF);

- (iii) transferring said [purified] PGCs into a recipient [Stage XII-XIV] avian embryo of the same species as the avian used to obtain said isolated, purified PGCs; and
- (iv) allowing said recipient avian embryo to develop into a germline chimeric avian.

30. (Twice Amended) A method for producing germline or somatic cell chimeric avians comprising:

- (i) isolating [a population of] primordial germ cells (PGCs) from a Stage XII-XIV avian embryo;
- (ii) culturing said [population of] PGCs for a period of at least fourteen days in tissue culture in the absence of a feeder layer in a culture medium comprising:
  - (1) leukemia inhibitory factor (LIF),
  - (2) basic fibroblast growth factor (bFGF),
  - (3) stem cell factor (SCF) and
  - (4) insulin-like growth factor (IGF);
- (iii) transferring said EGs into a recipient [Stage X] avian embryo of the same species as the avian used to obtain said isolated PGCs; and
- (iv) allowing said recipient avian embryo to develop into a germline or somatic cell chimeric avian.



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## gallinaceae

1 definition found

From Webster's Revised Unabridged Dictionary (1913) [web1913]:

Gallinaceae \Gal"li\*nace\*ae\, n. pl [NL. See {Gallinaceous}.]  
 (Zo["o]l.)  
 Same as {Gallinae}.



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## gallinae

1 definition found

From Webster's Revised Unabridged Dictionary (1913) [web1913]:

Gallinae \Gal\*li"nae\, n.; pl [NL., fr L. gallina a hen, gallus a cock.] (Zo["o]l.)

An order of birds, including the common domestic fowls, pheasants, grouse, quails, and allied forms; -- sometimes called {{Rasores}}.

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### 3.4 Birds

Numerically speaking, birds head the list of game animals. They are also the most popular target of sport hunters. The proliferation of books on game birds (36, 67, 146, 232, 336, 383, 433) attests to their interest and importance. The range of birds considered as game species varies regionally in accordance with the faunal composition, traditional patterns of use and types of users. The main game birds are the tinamous, ducks, Gallinaceae and pigeons.

Tinamous (Order Tinamiformes, Family Tinamidae), for whom Blake (59) lists 46 species, are medium-sized ground-dwellers 20-48 cm long, endemic to the neotropics, widely distributed and highly prized as food. Members of the Tinamus, Crypturellus and Nothocercus genera mainly inhabit tropical forest regions from southern Mexico to northern Argentina. Deforestation has a major impact on these forest-dwelling, sedentary animals. They are mainly hunted by subsistence hunters, who lure them by imitating their calls.

The other genera, Rhynconotus, Nothoprocta, Nothura, Eudromia and Tinamotis, are found south of the equator in open and non-tropical habitats - grasslands, brush, and dry or mountain areas. They are among the main game birds in southern South America (Table 20), particularly the "perdices" or tinamous (Nothura maculata, N. darwini) in Argentina, Uruguay, Paraguay and southern Brazil and Nothoprocta perdicaria in Chile (146, 329).

\* The Gallinaceae (Order Galliformes) are represented by three families in Latin America: the Cracidae, to which curassows, guans and chachalacas belong, the Phasianidae, or partridge family, and Meleagrididae (turkeys). The Cracidae, due to their special importance, are dealt with in a separate section (3.6).

Neotropical quail or partridges (24 species (59) plus some additional ones from northern Mexico (336)) are medium-sized birds, 16-36 cm total length, weighing 115-465 g, gregarious, ground-dwelling and granivorous. They are found in a wide variety of habitats with the greatest diversity in Central America and Mexico. The most widely-distributed species in Latin America belong to the genus Colinus, including four open habitat species ranging from the United States to Colombia, Venezuela and Guianas, and the genus Odontophorus with 14 wooded habitat species ranging from southern Mexico to southern Brazil. Their relative abundance even in modified environments, the quality of their meat and their lure as game birds make them very attractive to sport hunters. The fact that most species are quite small dampens the attraction for subsistence hunters. Turkeys (Meleagris, Agriocharis) are the most corpulent game birds in Latin America. Restricted to Mexico, Guatemala and Belize, the males can weigh as much as 7.5 kg and their flavourful and abundant meat is in great demand (336).

Latin America is home to some 60 species of pigeons (Order Columbiformes, Family Columbidae) (336, 351, 383), including several valuable game species and others too small to be hunted. These swift and steady flyers include species of vast distribution and/or migratory species.



Pigeons belonging to the genus Columa are larger (28-38 cm long, 150-380 g in weight) and are considered major game birds. Examples are C. fasciata in Costa Rica (381) and Panama (383), C. corensis and C. squamosa in Curaçao (Bakhuis, pers. com.), C. cayannensis in Venezuela (238) and C. picazuro in the Southern Cone countries (Table 19).

Wood pigeons of the genus Zenaida are probably even more intensively hunted, despite their small size (90-140 g). Zenaida asiatica is Mexico's most hunted bird (270, 336, 410); the population was estimated in 1981 at 12 million and the legal kill at 1.67 million (388). This species, also very important in Central America, is found all along the Pacific slope down to Chile. Zenaida macroura, and especially the migratory flocks from the north, is heavily hunted in Mexico and Central America (336, 383, 519). Zenaida auriculata is widely distributed throughout South America and is a major game species in various countries. Zenaida asiatica and Z. auriculata are highly gregarious, often nesting in myriad colonies. Agricultural activities can benefit the species, which can behave as pests (84, 178, 350, 410, 418). They are prolific, partially migratory and tolerate high rates of extraction (336). Other game doves are Leptotila and Geotrygon. Their swift flight, abundance in open areas and accessibility to hunters make pigeons singularly important in sport hunting, and commercial hunting is also practised in nesting colonies (84, 350, 536).

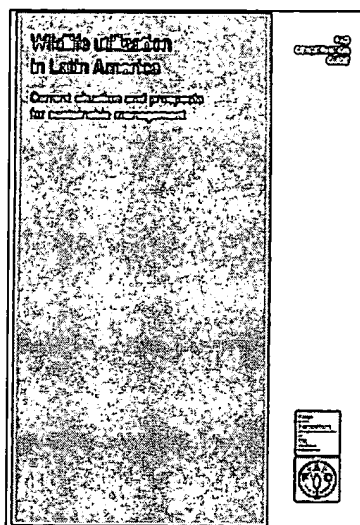
Bird groups other than the traditional game birds described above may be important regionally, particularly for subsistence hunters. In southern South America, greater and lesser rheas (Rhea americana, Pterocnemia pennata (Rheiformes) are hunted for their leather and feathers and because they are considered farm pests (351, 362, 452, 473). Cormorants (Phalacrocorax olivaceus (Pelecaniformes)), sometimes hunted for food, are listed as game animals in Suriname (566). Various kinds of herons are also hunted (Ciconiformes, Ardeidae), as are storks (Ciconiidae) and ibises (Threskiornithidae), but only in Trinidad and Tobago (584) and in Guyana (209) are they officially listed as game birds. In the llanos region, the bigger chicks of Mycteria americana are often eaten (Ojasti, pers. obs.).

The Order of Gruiformes includes several game species: the sandhill cranes (Grus canadensis) in Mexico, the rails (Aramides, five species), and coots or moorhens (Fulica, Gallinula), which are important game birds in wetland habitats in various countries (67, 146, 165, 212, 318); Psophia (three species), found in the Amazon forest underbrush, and one of the preferred forest subsistence game birds (Tables 4 and 8).

The well-populated Order of Charadriiformes are considered game species (67, 146, 336, 584), but the demand seems fairly muted excepting for snipe (Gallinago spp.), preferred by some sport hunters (67, 238, 261, 336). The category of subsistence hunting also includes macaws (Ara), parrots (Amazona) (Psittaciformes, Psittacidae), and toucans (Piciformes, Ramphastidae: Tables 4 and 8). These are officially listed as game birds in Trinidad (584) and Suriname (566). They are also much in demand as pets and large numbers are exported.



# Wildlife Utilization in Latin America: Current Situation and Prospects for Sustainable Management. (FAO Conservation Guide - 25)



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by Juhani Ojasti

Food and Agriculture Organization of the United Nations - FAO  
Rome, 1996

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